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ABSTRACT

The document offers a student workbook and a teacher's answer book to accompany a seventh grade geography unit on transportation and its environmental impact (see ED 120 036 and 113 222). Two types of exercises are offered in the workbook: a review sheet to be filled in by the students after studying a chapter and a final self-mastery test. The tests are keyed by page and paragraph to the text. In the event a student misses an item on the formative test, he can restudy the keyed paragraph in the text, find the correct response, and write the correct response in the workbook. The review sheets direct students to reconstruct models, define terms, list purposes, fill in blanks, and provide opinions and brief answers based upon information in the text. Optional activities are also suggested, such as measuring street noise, photographing transportation facilities, taking polls, and charting family trips. The tests, which consist of from 10-20 questions, require the students to fill in blanks, provide short answers, and give examples. (Author/DB)

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TRANSPORTATION and the ENVIRONMENT

STUDENT WORKBOOK

by

James S. Fagan

SO 010 382

GEOGRAPHY CURRICULUM PROJECT
UNIVERSITY OF GEORGIA
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Directions for Using the Student Workbook

This workbook consists of two types of exercises: a review section and a test section. After studying a chapter, the student should complete the review sheets. He may then take the self mastery test which follows the review test. Formative tests are keyed by page and paragraph to the text. In the event a student misses an item on the formative test, he should restudy the keyed paragraph in the text, find the correct response, and write the correct response in the workbook.

An answer book is provided the teacher for review sheets and formative tests.

Chapter 1 - The Unit Model

1. Reconstruct the model of the unit Transportation and the Environment.

2. Define Transportation.

3. List three ways in which we depend upon transportation:

   (a)

   (b)

   (c)

4. Briefly state the four major purposes of studying the unit Transportation and the Environment:

   (a)

   (b)

   (c)

   (d)

5. Reconstruct the model of Section I - Historical Development of American Transportation.

Chapter 2 - Network Development

1. Define the following:

   (a) Transportation Route -

   (b) Transportation Network -

   (c) Node -

   (d) Hinterland -

   (e) Penetration Lines -

   (f) Linkages -

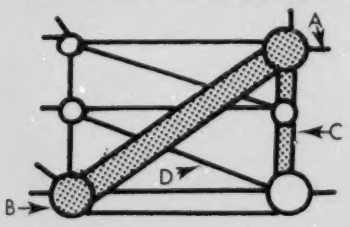
2. Linkages between major trade centers which handle large volumes of traffic are called _____.

3. Linkages which serve the hinterland of major nodes are called _____.

4. An obstacle which changes the direction of a transportation route is called a _____.

5. Transport _____ are the movement of people or goods along transportation networks.

6. Label the lettered parts of the following model:



A _____

B _____

C _____

D _____

7. The transportation network model described in this chapter assumes that the colony has a _____.

8. Penetration lines extend from the _____ to the _____ of a colony.

9. List two possible reasons for some colonial ports developing more rapidly than others.

   (a)

   (b)

10. List three obstacles which might change the direction of a transportation route.

    (a)

    (b)

    (c)

Refer to the map on page 16 to answer the following questions.

11. What three regions of the United States have the highest volume of highway traffic? What major cities are included in these regions?

12. What part of the United States has the lowest volume of highway traffic?

13. From the information given in this map, would you say that the population in the United States is evenly or unevenly distributed? Explain.

14. Use the map on page 16 and an atlas or road map to identify as many of the following as possible in your state:
(Answer on back of page)

(a) Cities

(b) Interstate Highways

(c) Other Highways

List only those you can clearly identify from the map on page 16.

Formative Test - Chapters 1 & 2

Complete the statements by supplying the necessary information.

pg. 2, p. 1 1. _____ is the movement of people or goods from one place to another.

pg. 1 The three major sections covered in the unit Transportation and the Environment are:

2. _____

3. _____

4. _____

pg. 7, p. 1 5. When several transportation routes are connected, a _____ is said to have developed.

pg. 7, p. 4 6. The area surrounding a transportation node and served by the node is called the _____.

pg. 7, p. 5 7. Major routes which extend from main ports to the interior of a developing country are called _____.

pg. 8, p. 2 8. Connections among transportation nodes are called _____.

pg. 9, p. 2 9. _____ are the routes which connect the largest and most important cities in the area.

pg. 10, p. 1 Three examples of reflecting barriers are:

10. _____

11. _____

12. _____

pg. 11, p. 2 13. A real-life example of the transport network development model shown in Chapter 2 is _____.

pg. 9, p. 1 14. Routes which connect a trading center with its surrounding area are called _____.

Review Sheet

Chapter 3 - Early Transport Routes

1. Define the following:

   (a) Migration -

   (b) Terrain -

   (c) Navigable Waterways -

   (d) Inter-colony Roads -

   (e) Urban Center -

   (f) Early Road Building Era -

   (g) Commodities -

2. Briefly explain how the American Indians contributed to the development of our present day transportation routes.

3. Using an atlas or globe, identify the following:

   (a) three countries with indented coastlines

   (b) three countries with non-indented coastlines

4. Why did most early roads in the American colonies run in a north-south direction?

5. What types of goods were best suited for transporting on canals? Why?

6. How did the Erie Canal help New York City develop as a major port?

7. List three disadvantages of canal transportation in the United States in the 1800's.

   (a)

   (b)

   (c)

8. Find a map showing the geographic terrain of the state of New York. Compare it with the map on page 20 and try to answer the following question:

   What geographic features in the state of New York might have influenced the Iroquois Indians to choose the route they did to build the Iroquois Trail?

   Answer the following question by referring to the diagram of a section of the Erie Canal on page 23.

9. Approximately how wide was a strip of land upon which the Erie Canal was built? How did this compare to the land used by the railroads which replaced the canals?

Formative Test - Chapter 3

Complete the statements by supplying the necessary information.

pg. 19, p. 2 1. The early American Indians often found it necessary to _____ with the seasons.

pg. 19, p. 3 2. Prairies and mountains are examples of two types of _____ that the American Indians had to cross with their foot trails.

pg. 20, p. 2 3. The indented coastline of the Atlantic coast provided the early colonists with some excellent _____ _____.

pg. 19, p. 6 Name two types of transportation routes which early Indian villages grew along.

4. _____

5. _____

pg. 20, p. 2 6. Waterways which permit the passage of ships are called _____ waterways.

pg. 21, p. 2 7. Most of the early inter-colony roads ran in a north-south direction because _____ _____.

pg. 21, p. 2 8. The major geographic barrier to the construction of east-west roads in the early American colonies was _____.

The Lewis and Clark and Santa Fe trails are examples of:

pg. 21, p. 3 9. transport routes built during the _____ era.

pg. 22, p. 1 10. which helped open up territories in the _____ part of the United States to settlement and expansion.

pg. 22, p. 5 11. The Erie Canal helped New York City become a major port by connecting it with the _____.

pg. 22, p. 4 12. Canals were best suited for hauling what types of goods? _____

pg. 23, p. 1 13. Many canals were forced to shut down because of competition from what other means of transportation? _____

pg. 23, p. 2 Two disadvantages of canal transportation were:

14. _____

15. _____

Chapter 4 - Railroad Development

1. Define the following:

   (a) Ton Mile Cost -

   (b) Domestic -

   (c) Technology -

   (d) Gauge -

   (e) Land Grants -

   (f) Transcontinental -

2. A system of railroad rates which favors a particular group or section of the country is called _____.

3. The heavily populated area in the northeastern United States which extends from Washington, D. C. to Boston, Massachusetts is called the _____.

4. To _____ is to pay another's expenses.

5. _____ are refunds given to favored industries or individuals.

6. New things that are introduced by invention, discovery, or diffusion are called _____.

7. The term _____ refers to trade between states.

8. Briefly explain why the lack of a uniform gauge track in the United States caused problems for rail travelers in the 1800's.

9. List two reasons for railroad expansion west of the Mississippi River in the 1850's and 1860's.

(a)

(b)

10. List and briefly explain three corrupt practices carried out by railroad management in the last half of the nineteenth century.

(a)

(b)

(c)

11. List four technical improvements made in railroading during the period lasting from 1880 to 1914.

(a)

(b)

(c)

(d)

12. Summarize in one or two paragraphs reasons for the decline of railroad passenger business in the United States in the twentieth century. (Answer this question on the back of the page)

13. What is railroad "piggyback" service? What advantage does it have over shipping goods in regular railroad cars? (See picture on page 38)

14. What effect is modern computer technology having on railroad freight service? (See pages 37-39)

15. From the information given in the table on page 33, construct a line graph showing the railroad mileage in the United States from 1860 to 1920. What general trend can you see from looking at the graph?

16. What specifically does the chart on page 35 tell you about railroad passenger travel in the United States from 1929 to 1970?

Formative Test - Chapter 4

pg. 26, p. 1 1. _____ is the cost of hauling one ton of goods over a distance of one mile.

pg. 26, p. 3
pg. 27, p. 2 2. Improvements in the use of metals (metallurgy) and improvements in the design of steam engines are examples of better railroad _____.

pg. 27, p. 2
pg. 28, p. 1 List two physical dangers that passengers on the early railroads were exposed to:

3. _____

4. _____

pg. 28, p. 2 5. The width of railroad tracks is referred to as the _____.

pg. 28, p. 5
pg. 30, p. 2 6. During the 1850's and 1860's, the federal government offered the railroads free _____ as a means of encouraging them to expand in the western territories.

pg. 30, p. 2 7. A transcontinental railroad is one which _____.

pg. 31, p. 2 Two of the most common corrupt railroad practices in the last half of the nineteenth century were:

8. _____

9. _____

10. Trade between states is referred to as _____.

pg. 32, p. 3
pg. 33, p. 3 Examples of three technical improvements made in railroading in the United States between 1880 and the beginning of World War I (1914) are:

11. _____

12. _____

13. _____

Chapter 4 - Formative Test

pg. 31, p. 4 14. To _____ is to pay another's expenses.

pg. 34, p. 1 The decline of railroad passenger service in the twentieth century has largely been brought about by competition from what other means of transportation?

15. _____

16. _____

pg. 35, p. 4
pg. 37, p. 1 17. "Piggyback" rail service involves transporting _____ on railroad flatcars.

pg. 35 - 39 18. An example of a new innovation in rail freight business in addition to "piggyback" service is _____.

pg. 39 The populous Northeast Corridor extends between what two cities?

19. _____

20. _____

Chapter 5 - Motor Vehicle Development

1. Define the following:

   (a) Terminal Cost -

   (b) Over-the-Road Cost -

   (c) Limited-access Freeways -

   (d) Crosstown Routes -

   (e) Perimeter Routes -

   (f) Connecting Routes -

   (g) Mass Production -

2. A _____ is an official document giving an inventor exclusive rights to his invention.

3. Identical parts which are used in mass production are called _____.

4. A _____ involves the combining of two or more businesses into a single company.

5. Interurban trucking refers to truck travel _____.

6. Intraurban trucking refers to truck travel _____.

7. Name one advantage and one disadvantage of the mass production system:

   advantage -

   disadvantage -

8. In what way did the U. S. automobile industry contribute to the war effort in World War II?

9. Briefly explain what was provided for by the Highway Act of 1956.

10. What is required by the Automobile Information Disclosure Act of 1958? How does it help the American consumer?

11. Briefly explain why you think the automobile has become the most popular means of passenger transportation in the United States.

12. Why is it usually cheaper to ship goods by truck than by train over short distances (less than 300 miles)? See chart on page 50.

13. In one or two paragraphs, compare the advantages of shipping goods by truck with the advantages of shipping by rail. (Answer on back of page)

14. On a separate page, trace the freeway system in a major city in your state and label the following:

    (a) Crosstown Routes

    (b) Perimeter Routes

    (c) Connecting Routes

15. What safety devices are on today's cars which are missing on the cars pictured in figure 5.1?

16. By using the map in figure 5.2, figure out approximately how many miles of interstate highways are in your state.

Formative Test - Chapter 5

pg. 43, p. 1 1. An automobile engine which internally produces its own power is called an _____ engine.

pg. 43, p. 3 2. A _____ is a document which gives an inventor exclusive rights to his invention.

pg. 43, p. 4 3. Identical parts used in the mass production of automobiles are called _____.

pg. 44, p. 1 4. A merger occurs when two or more businesses _____.

pg. 47, p. 1 5. The Highway Act of 1956 approved the construction of _____.

pg. 47, p. 3 Examples of two automobile safety standards which have been put into effect in the late 1960's and early 1970's are:

6. _____

7. _____

pg. 48, p. 8 8. Interurban trucks are used to haul goods _____.

pg. 49 9. Intraurban trucks are used to haul goods _____.

pg. 49 Examples of two types of intraurban trucks are:

10. _____

11. _____

pg. 50, p. 3 12. If a freight shipment is being sent a distance of 100 miles, what type of ground transportation is probably the cheapest?

_____

pg. 50, p. 3 13. _____ is the cost of loading a vehicle for shipment.

pg. 50, p. 3 14. _____ is the cost of actually moving goods from one place to another.

Chapter 5 - Formative Test

pg. 51, p. 1 15. Name one advantage that shipping goods by truck has over shipping by rail.

_____

pg. 51, p. 2 16. Name one advantage that shipping goods by rail has over shipping by truck.

_____

pg. 52, p. 1 17. Does the biggest impact of buses in the future appear to be for transporting people within cities or between cities?

_____

pg. 52, p. 2 18. Multi-lane divided highways with a limited number of places from which vehicles are allowed to enter or leave are called _____.

pg. 52, p. 4 19. _____ are routes in a freeway system which carry traffic from the suburbs into the central city or from one side of town to the other.

pg. 52, p. 4 20. Perimeter routes are routes in a freeway system which carry traffic _____.

Chapter 6 - Aviation Development

1. Define the following:

   (a) Aviator -

   (b) Intercontinental Flight -

   (c) Peak Hours -

   (d) Airways -

   (e) Federal Aviation Administration -

   (f) Civil Aeronautics Board -

2. A _____ is a flight across the entire distance of a continent.

3. The distance an aircraft is capable of flying without refueling is called its _____.

4. Private and business flying fall into the category of _____ aviation.

5. To _____ is to board an aircraft.

6. A _____ is the cost of one person flying over a distance of one mile.

7. A _____ is one ton of air freight being flown over a distance of one mile.

8. What influence did Charles Lindbergh's 1927 flight across the Atlantic Ocean have upon aviation developments?

9. Briefly explain how aviation changes in World War II influenced civilian flying after the war.

10. List three airport-related problems that have been brought about by the use of jet aircraft:

(a)

(b)

(c)

11. Name two specific tasks of the Federal Aviation Administration:

(a)

(b)

12. Construct a line graph comparing fatality rates per 100 million passenger miles of domestic airline flights and automobiles for the period 1962-1972. See page 69 for information. (Answer on back of page)

13. What problems were faced by the pilots of the planes pictured on page 60 which are not faced by pilots of modern aircraft?

14. List three advantages a person travelling in the plane pictured in figure 6.7 might have over a person travelling in the plane pictured in figure 6.5.

    (a)

    (b)

    (c)

15. How does the design of the airport in your community compare with the one pictured in figure 6.10?

Use the chart on page 68 (figure 6.11) to answer the following:

16. How many passengers boarded U. S. scheduled airlines in the following years?

    (a) 1962

    (b) 1965

    (c) 1968

    (d) 1970

    (e) 1972

Formative Test - Chapter 6

pg. 57, p. 4 1. A pilot or other member of an aircraft's crew is referred to as an _____.

pg. 59, p. 1 2. Aviation played a (major) (minor) role in the outcome of World War I. _____

pg. 59, p. 3 3. A transcontinental flight is one which _____ _____.

pg. 59, p. 5 4. A flight from New York to London is an example of an _____ flight.

pg. 61, p. 1 5. To say that an airplane has a range of 500 miles means that _____ _____.

pg. 62, p. 2 6. Aviation played a (major) (minor) role in the outcome of World War II. _____

pg. 62, p. 4 Name two advantages that jet airliners have over the piston-powered aircraft they replaced.

7. _____

8. _____

pg. 62, p. 5 What are two problems that have been brought about by the widespread use of jet airliners in the 1960's and 1970's?

9. _____

10. _____

pg. 65, p. 1 11. The times of the day when airports are most crowded are called _____.

pg. 67, p. 1 12. General aviation is a term which refers to _____ flying.

pg. 67, p. 1 13. Airliners fly in assigned paths through the airspace. What are these paths called? _____.

pg. 67, p. 1 14. Giving pilots weather information and enforcing aviation rules are duties of the _____.

pg. 67, p. 2 15. The _____ is an agency of the Department of Transportation that awards air routes and sets passenger fares.

Chapter 6 - Formative Test

pg. 67, p. 4 16. To enplane means to _____.

pg. 67, p. 5 17. The cost of one person travelling over a distance of _____ is a revenue passenger mile.

pg. 67, p. 7 18. A _____ is one ton of air freight being flown over a distance of one mile.

pg. 68 19. During the period from 1962 to 1972, the number of passengers flying on U. S. scheduled airlines has (remained about the same) (approximately doubled) (approximately tripled).

_____

pg. 68, p. 8
pg. 69 20. In each year during the period from 1962 to 1972, the fatality rate per 100 million passenger miles on U. S. scheduled domestic airliners was (less than) (more than) the rate for private automobiles.

_____

Review Sheet

Chapter 7 - Transportation-Related Pollution

1. Define the following:

   (a) Urban Dominance -

   (b) Suburbs -

   (c) Air Pollution -

   (d) Water Pollution -

   (e) Toxic Pollutants -

   (f) Decibel -

2. An example of landscape pollution is _____.

3. Silt in waterways caused by rain runoff is called _____.

4. Name two pollutants found in the exhaust of motor vehicles:

   (a)

   (b)

5. Briefly explain why two different decibel scales are used to measure aviation noise and ground transportation noise.

6. Explain in one paragraph how noise exposure forecasta are used to help airport designers. (Answer on back of page)

Use the map on page 74 to answer the following:

7. What conclusions can you draw about changes in the distribution of population in the United States between 1890 and 1970? Name two transportation problems that have been brought about by these changes.

8. Since motor vehicles contribute so much to air pollution, why have federal standards requiring anti-pollution devices on all new cars and trucks recently been relaxed or postponed?

9. How does the way in which an automobile is driven effect the noise it gives off? (See chart on page 80).

10. List and briefly explain two ways in which ground transportation contributes to water pollution.

    (a)

    (b)

11. What are the main sources of water pollution in the United States?

12. List as many examples as possible of landscape pollution which is related to transportation in your community.

OPTIONAL ACTIVITIES

_____ If you have access to a noise-measuring device, set it up next to a busy street. Measure and keep a record of the noise levels given off by various vehicles. Report your findings to the class.

_____ Take some pictures or slides of any transportation facilities in your community which you think might be contributing to water pollution. Show these to the class and explain.

_____ Take pictures or slides of examples of landscape pollution in your community which are related to transportation in some way. Show these to the class and explain.

Formative Test - Chapter 7

pg. 73, p. 1 1. Urban dominance is when most people live _____.

pg. 73, p. 2 2. In 1970 about (25%) (50%) (75%) of the population of the United States was classified as urban.

pg. 73, p. 3 3. Residential areas on the outskirts of a city are called _____.

pg. 75, p. 1 4. Air pollution is defined as _____.

pg. 75, p. 2 5. What is the one biggest source of air pollution in the United States? _____

pg. 75, p. 3 Name two pollutants that are found in the exhaust of motor vehicles:

6. _____

7. _____

pg. 76, p. 1 8. _____ pollution is when there is too much unwanted sound.

pg. 77, p. 3 9. The decibel scale is used to measure _____.

pg. 78, p. 1 10. The Effective Perceived Noise Units (EPNdB) decibel scale is used to measure what type of transportation noise? _____

pg. 78, p. 1 11. The A-weighted decibel scale dB(A) is used to measure what type of transportation noise? _____

pg. 78, p. 3 12. Noise Exposure Forecasts are used when designers are planning a new _____.

pg. 78, p. 5 13. What type of motor vehicles give off the greatest amount of noise? _____

pg. 80, p. 3 14. An automobile traveling at a constant or steady speed is (quieter) (louder) than an accelerating automobile.

Chapter 7 - Formative Test

pg. 81, p. 2 15. Water pollution is defined as _____.

pg. 81, p. 3 16. Transportation (is) (is not) the major source of water pollution in the United States.

pg. 81, p. 3
pg. 82, p. 2 Give two examples of how transportation causes water pollution:

17. _____

18. _____

pg. 83 Give two examples of landscape pollution that is related to transportation:

19. _____

20. _____

Review Sheet

Chapter 8 - Transportation and Urban Congestion

1. Define the following:

   (a) Traffic Congestion -

   (b) Status Symbol -

   (c) Projected -

   (d) Air Traffic Control -

   (e) Aircraft "Stackups" -

2. _____ is the largest number of cars and trucks a road network can handle at one time.

3. _____ is the largest number of people a road network can handle at one time.

4. Give two examples of public transportation:

   (a)

   (b)

5. What is involved in the practice of aircraft separation? What is the purpose of this practice?

6. Explain in one or two paragraphs what activities go on in airport control towers. Why are control towers so important to aviation? (Answer on back of page)

7. Electronic aids used to help fly airplanes safely are called _____.

8. What are low density suburbs? Why do they often not have public transportation?

9. Why are road networks especially crowded during two peak periods of the day?

10. Why did flights have to be "rationed" at some major airports in the United States in 1968?

11. What is an airway network? How does it differ from a highway network?

OPTIONAL ACTIVITIES

_____ Stand at a busy intersection during morning or evening peak hours. Keep a record of the number of cars passing by for at least 30 minutes. Also record the number of people in each car and figure out the average number of passengers per car. See how close your results are to the national average given on page 88.

_____ Arrange a tour of an airport in or near your community. You will be able to see first-hand many of the things you read about in this chapter.

_____ Arrange to visit an FAA air route traffic control center if one is nearby. These centers follow in route aircraft on radar and provide pilots with much valuable information.

_____ Contact the motor vehicle office in your county. Find out the number of motor vehicles registered and the number of licensed drivers registered. What is the ratio of drivers to automobiles?

_____ Imagine that you are on a committee assigned to recommend routes for a public transportation system in your community (bus or rail). Show on a city map where you would locate the routes. Explain your reasons to the class. (Group Project)

Formative Test - Chapter 8

pg. 86, p. 3 1. When experts predict the number of automobiles in the United States in the future based upon past trends, the predictions are said to be _____.

pg. 86, p. 4 2. A visible sign of a person's wealth is called a _____.

pg. 87, p. 1 Give examples of two types of public transportation:

3. _____

4. _____

pg. 86, p. 2 5. When traffic is so heavy that it backs up and moves slowly is is said to be _____.

pg. 88, p. 1 6. According to recent surveys, the average number of commuters transported in automobiles in the United States is between: (1 and 2) (2 and 3) (3 and 4)

_____

pg. 88, p. 2 7. The largest number of vehicles a road network can handle at one time is called the _____.

pg. 88, p. 2 8. The largest number of people a road network can handle at one time is called the _____.

pg. 87, p. 2 Name two advantages that traveling by private automobile has over traveling by other means of surface transportation.

9. _____

10. _____

pg. 90, p. 1-p. 2 11. _____ is a service provided by the Federal Avaiation Administration which gives pilots flight instructions in order to make aviation safer.

pg. 89, p. 5 12. Where are aircraft "stackups" most likely to occur?

_____

pg. 90, p. 3 13. The spacing of aircraft while taking off, in flight, or landing is called _____.

pg. 90, p. 3 14. The upper level of an airway network (above 18,000 ft.) is reserved for what type of aircraft?

_____

Chapter 8 - Formative Test

pg. 90, p. 4 15. Give an example of an aviation navigational aid.

_____

pg. 90, p. 5 16. The purpose for having an airport control tower is _____.

Review Sheet

Chapter 9 - Transportation Land Requirements

1. Define the following:

   (a) Network Density -

   (b) Right of Way -

   (c) Median -

   (d) Freeway Interchange -

2. Briefly explain the difference between financial and social costs of freeway construction.

3. Give two examples of social costs of freeway construction:

   (a)

   (b)

4. _____ _____ is a term which refers to ways in which people talk, visit, and do business with each other.

5. What city in your state would you expect to have the highest degree of freeway network density? Why?

6. Why are urban freeways often built through low-income neighborhoods?

7. Property in a city which can be taxed is referred to as the _____.

8. Give three examples of supplementary transport facilities related to ground transportation.

   (a)

   (b)

   (c)

9. What is the purpose of an airport buffer zone? Does the airport in your community have one?

10. If you were recommending a site for a new jet airport, what factors would you have to consider? Give at least two not mentioned in the book.

11. _____ is deciding the types of structures and activities to allow in the area surrounding an airport.

12. What types of activities are generally incompatible with major airports?

13. What types of activities are generally compatible with major airports?

OPTIONAL ACTIVITIES

____ Get a map of the freeway system in your city. See if you can determine what types of residential and business areas the system goes through.

____ On a map of a major jet airport, circle all human activities and buildings located around the airport. Try to decide if these activities and buildings are compatible or incompatible with aviation. Report your findings to the class.

Formative Test - Chapter 9

pg. 95, p. 1 1. What form of ground transportation requires the greatest amount of land? _____

pg. 95, p. 2 2. If a city contains a large number of transport routes, it is said to have a high degree of _____.

pg. 95, p. 2 3. The land upon which a freeway is built is called the _____.

pg. 95, p. 2 4. The _____ is the strip of land which separates freeway lanes.

pg. 95, p. 2 5. A freeway interchange is a place where _____.

pg. 95, p. 3
pg. 96, p. 1 Give three examples of social costs of freeway construction (changes in lifestyles of people living in neighborhoods through which freeways are built).

6. _____

7. _____

8. _____

pg. 97, p. 1 9. The property in a city which can be taxed is called the _____.

pg. 97, p. 3 Give examples of two supplementary transport facilities.

10. _____

11. _____

pg. 98, p. 1 Give examples of three factors airport planners must consider when selecting a site for a new airport:

12. _____

13. _____

14. _____

pg. 98, p. 6 15. An area around an airport without houses and stores which takes up aviation noise is called a _____.

Chapter 9 - Formative Test

pg. 98, p. 7 16. Deciding the types of structures to allow in the area surrounding an airport is referred to as _____.

pg. 98, p. 3- p. 4 Two human activities that are incompatible with big jet airports are:

17. _____

18. _____

pg. 98, p. 5- p. 6 Two human activities that are compatible with big jet airports are:

19. _____

20. _____

Chapter 10 - Efficient Use of Existing Facilities

1. Define the following:

   (a) Alternative -

   (b) Public Transportation -

   (c) Motor Vehicle Direction Systems -

   (d) Non Peak-hour Flying -

2. Explain in no more than one paragraph how work scheduling changes might help to relieve traffic congestion.

3. Lanes on urban freeways which are reserved for buses are called _____.

4. List three advantages commuter car pooling might have in your community:

   (a)

   (b)

   (c)

5. Give two examples of public transportation:

   (a)

   (b)

6. What is meant by improved short-trip efficiency? Briefly explain two ways in which your family might improve on short-trip efficiency. (Answer on back of page)

7. What is being done to the engines on older jet aircraft to help cut down on the pollution that they give off?

8. Give examples of three noise-reducing procedures which have been put into effect around major jet airports:

   (a)

   (b)

   (c)

9. What are remote air terminals? What services do they provide and what impact could they have upon major airports at peak hours?

10. Smoke which is released from jet aircraft engines as exhaust is called _____.

OPTIONAL ACTIVITIES

_____ Take a poll of teachers in your school or adults in your neighborhood and find out how many come to work alone, how many come in carpools, and how many use public transportation. Find out the reasons for their choice of transportation. Make a chart showing the results of your poll and explain to the class.

_____ Keep a record of all of the trips taken in your family car over a one week period. Add up the total mileage and figure out the cost. Then get a city map and see if you can figure out how to do the same things in fewer miles

_____ Is noise pollution a serious problem at the airport in your community? If so, contact the authorities at your local airport authority and ask what noise-reducing procedures are being used or planned. Report your findings to the class.

pg. 104, p. 3 1. When two or more people ride to work together, they are said to have formed a _____.

pg. 103, p. 2 2. An alternative is _____.

pg. 104, p. 1 3. The purpose of staggering starting and quitting times of employees is to _____.

pg. 105, p. 1 Examples of two forms of public transportation are:

4. _____

5. _____

pg. 106, p. 3 6. Changeable roadside message signs which warn drivers in advance of dangerous traffic conditions and give information on other routes are called _____.

pg. 106, p. 5 Examples of two ways to improve short-trip efficiency are:

7. _____

8. _____

pg. 107, p. 5
pg. 109, p. 2 Three noise reducing procedures which have been put into effect around major airports are:

9. _____

10. _____

11. _____

pg. 109, p. 3 12. Places located several miles from an airport where passengers can park their cars, buy plane tickets, check their baggage, and board a bus for the airport are called _____.

13. Flying at times other than the two busiest periods of the day is referred to as _____.

pg. 107, p. 3 14. The new "wide bodied" jet aircraft of the past few years release (more) (less) pollution into the air than the earlier jets.

_____

Chapter 11 - Direct Government Control

1. Define the following:

   (a) Direct Government Controls -

   (b) Environmental Proection Agency -

   (c) Surcharge -

   (d) Environmental Impact Statement-

2. Why has the President of the United States allowed an extension on the deadlines for making automobiles almost pollution-free?

3. Limits on transportation noise levels are called _____.

4. Give two advantages and two disadvantages of fuel rationing.

advantages	disadvantages
(a)	(c)
(b)	(d)

Do you think fuel rationing is a good method of conserving petroleum resources: Why or why not?

5. Do you think owners of least-polluting automobiles should be given tax breaks? Why or why not?

6. Look at the map of the AMTRAK rail passenger network on page 118. Does AMTRAK have any passenger service in your state? In your city? What cities appear to have the best rail passenger service?

7. What is meant by federally subsidized mass transit? Do you think this is a good alternative to putting more money into highway projects?

8. What problems are created when airliners and private aircraft use the same airports?

9. Why has Japan had to rely more on rail passenger transportation than the United States? Use an atlas to help you answer this question.

10. Electronic equipment used to help aircraft land more safely during periods of bad weather is called _.

OPTIONAL ACTIVITIES

_____ Conduct a survey on methods of saving fuel. List all of the alternatives you can think of and ask individuals to choose the method they think is best and state the reason for their choice. Tabulate the results and report back to the class.

_____ Identify direct government controls of ground and air transportation which are not discussed in Chapter 11. Explain why you think these might work.

Formative Test - Chapter 11

pg. 113, p. 4 1. _____ standards are limits on pollutants given off by automobile exhaust.

pg. 113, p. 5 2. The federal agency which has the responsibility for enforcing anti-pollution laws is the _____.

pg. 114, p. 3 3. The Noise Control Act of 1972 established maximum noise levels which applied mainly to the owners of _____.

pg. 114, p. 6 4. _____ is putting limits on the amount of gasoline a person can buy.

pg. 115, p. 3 5. A _____ is giving lower taxes for a particular purpose such as driving a low-polluting automobile.

pg. 117, p. 11 6. Nationalized rail passenger service is run by _____.

pg. 116, p. 4 Name two difficulties faced by AMTRAK when it took over most of the rail passenger service in the United States in the early 1970's:

7. _____

8. _____

pg. 119, p. 5 9. A _____ is an extra charge put on something.

pg. 120, p. 2 10. When private aircraft and jet airliners operate out of a busy airport, they are usually found to be (compatible) (incompatible).

_____

pg. 121, p. 1 11. What agency of the federal government has the responsibility for regulating aircraft noise levels?

_____

pg. 121, p. 3 12. An example of one type if airport approach aid is _____.

pg. 121, p. 5-p. 6 13. An environmental impact statement issued when a new freeway is being planned must state _____.

Review Sheet

Chapter 12 -- Urban Rapid Transit

1. Define the following:

   (a) Urban Rapid Transit System -

   (b) Unimodal Transit System -

   (c) Intermodal Transit System -

   (d) Feeder Bus Routes -

   (e) Urban Mass Transit Administration -

2. Buying land for a rapid transit system is called _____.

3. List and briefly explain two construction problems which had to be dealt with by the builders of the Bay Area Rapid Transit System:

   (a)

   (b)

4. Subways are trains which run _____.

5. Aerial lines are transit lines which run _____.

6. How does the operation of BART trains compare with that of more conventional trains?

7. Explain in one paragraph how BART may help create a healthier environment. Give as many reasons as you can.

8. What is the most important difference between the metropolitan Atlanta Rapid Transit Authority System and the BART system?

9. Did the geographic terrain create more problems in the construction of the BART system or the MARTA system? Explain.

10. What are park and ride facilities? What is the main advantage of such facilities?

Formative Test - Chapter 12

pg. 124, p. 1 1. A high-speed commuter train system in a large city is an example of a (an) _____ system.

pg. 127-128 Name three ways in which geographic features in the San Francisco Bay area caused problems for the builders of the Bay Area Rapid Transit System:

2. _____

3. _____

4. _____

pg. 129, p. 3 5. A train which runs underground is called a _____.

pg. 130, Fig. 12.5 6. Transit lines which run on structures above the ground are called _____ lines.

pg. 129, p. 4 7. A unimodal transit system is one which _____ _____.

pg. 130, p. 1 8. The trains in the BART system are run by automated train control. This means that they are operated by _____.

pg. 132, p. 3 9. The biggest savings the BART system will bring to the San Francisco Bay area is in terms of _____ used.

pg. 133, p. 4 10. An intermodal transit system is one which _____ _____.

pg. 133, p. 2 11. The _____ is a branch of the U. S. Department of Transportation which is financing about two-thirds of the cost of the Metropolitan Atlanta Rapid Transit Authority System.

pg. 135, p. 1 12. Land acquisition means _____ land for a particular purpose such as a rapid transit system.

pg. 133, p. 4 13. What is the biggest single difference between the BART and MARTA systems?

pg. 135, p. 9 14. _____ bus routes in the MARTA system will tie into the rapid rail and busway systems.

Review Sheet

Chapter 13 - Transport Modes of the Future

Briefly explain the main characteristics of each of the following modes of transportation. Also state what type of travel each is best suited for (e.g., short distance or long distance).

1. Monorail Systems -

2. Tracked Air Cushion Vehicles -

3. Tube Vehicle Systems -

4. Personal Rapid Transit Systems -

5. Short Takeoff and Landing Aircraft -

6. Surface Effect Ships -

7. What types of goods are most often transported through piplines? Can you think of any important pipeline construction project going on in the United States at the present time?

OPTIONAL ACTIVITY

_____ Select one of the transport modes discussed in Chapter 13 or one you are familiar with which is not discussed in the test. Gather information, charts, pictures, etc. and present your findings to the class.

pg. 139, p. 5 1. A _____ system has railway cars which either straddle or hang in the air from a single aerial rail.

pg. 140, p. 1 2. In a Track Air Cushion Vehicle System, the track serves as a _____.

pg. 140, p. 3 3. The _____, if put into use, will probably be the fastest mode of ground transportation available.

pg. 140, p. 5 4. Personal Rapid Transit (PRT) systems are designed for (intraurban) (interurban) travel.

pg. 144, p. 1 5. What effect are Personal Rapid Transit Systems expected to have upon the central city?

pg. 144, p. 4 6. Short Takeoff and Landing (STOL) aircraft will be best suited for (trunk) (feeder) _____ airlines.

pg. 141, p. 5 7. The _____, now being tested by the U. S. Navy, may bring major changes in water transportation.

pg. 143, p. 4 8. Pipelines are now used to transport over half of the _____ in the United States.

pg. 143, p. 6 Name two types of material which may be transported by pipeline in the future:

9. _____

10. _____

TRANSPORTATION AND THE ENVIRONMENT

BY

JAMES FAGAN

Teacher's Answer Book to

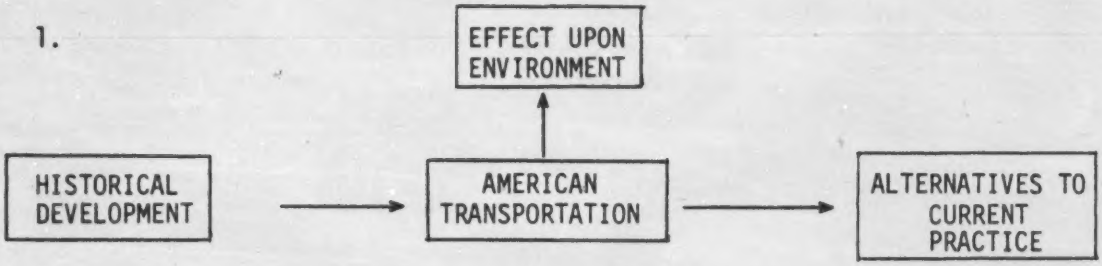
STUDENT WORKBOOK

SD 010 382

GEOGRAPHY CURRICULUM PROJECT
UNIVERSITY OF GEORGIA
MARION J. RICE, DIRECTOR

51-59

1.

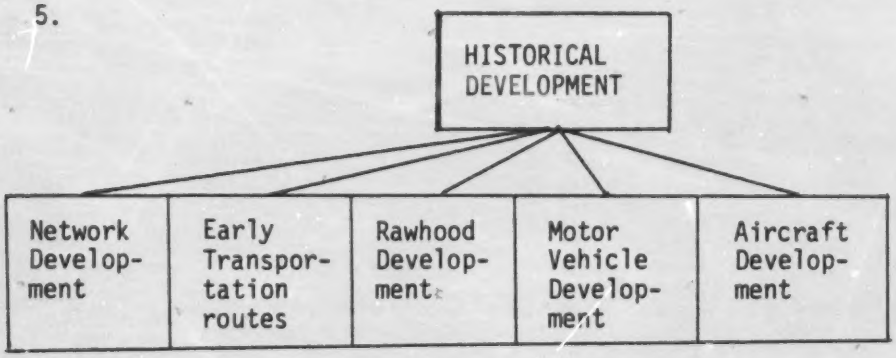


2. The movement of people and goods from one place to another

3. a) trips to work and school
   b) vacation trips
   c) delivery of food supplies

4. a) to describe the historical development of transportation in America
   b) to show effect of current transportation practices in the environment
   c) to suggest transportation practices which would result in a healthier environment.
   d) to show expected effect on the environment of transportation being developed for the future

5.



Review Sheet Answers
Chapter 2

1. a) route over which vehicles move people or goods from one place to another
   b) a pattern of connected transportation routes
   c) a city or trading center which serves as a connecting point for transportation routes
   Nodes and routes make up a transportation network.
   d) area served by the transportation node
   e) major routes which extend from main ports to the interior of a developing country
   f) connections among nodes in a transportation network

2. trunk lines

3. feeder lines

4. reflecting barrier

5. flows

6. a) feeder lines
   b) dominant port
   c) linkages
   d) trunk lines

7. seacoast

8. coast, interior

9. a) easy access to the interior
   b) natural resources or growth of the population

10. a) large bodies of water
    b) mountains
    c) swamps

11. Northeast, NorthCentral, West Coast, New York, Boston, Chicago Detroit, Los Angeles, San Francisco

12. West Central

13. Unevenly distributed. Highway traffic reflects population density and because highway traffic is not evenly distributed, the population is not.

Formative Test Answers - Chapters 1 and 2

1. transportation
2. historical development
3. effect upon environment
4. alternatives to current practice
5. transportation network
6. hinterland
7. penetration lines
8. linkages
9. high - priority linkages
10. mountains
11. water
12. swamps
13. early colinization along The Atlantic Coast
14. feeder lines

Chapter 3
Review Sheet Answers

1. a) moving from one place to another
   b) the physical features of a tract of land
   c) waterways which permit passage of ships
   d) roads which connected two or more colonies
   e) a city and its immediate surrounding area
   f) period of time from about 1750 to 1825, during which many roads were built
   g) goods; articles of trade or commerce

2. Early Indian trails and villages provided patterns for the settlers to follow. Indian villages provided information about the interior and how to move there.

3. a) United States, Norway, Sweden, Chile
   b) Spain, Romania, Algeria, Libya

4. The Appalachian Mountains run North-South and forced the colonists to construct their roads North-South.

5. heavy, bulky loads

6. by connecting it with the Midwest

7. a) high construction costs
   b) slow speed
   c) closed in winter by ice

8. Mohawk Valley, mountains

9. 75' - 80' 5' - 10'

Chapter 4
Review Sheet Answers

1. a) cost of hauling one ton of goods over a distance of one mile
   b) events happening entirely within a country; excludes foreign affairs
   c) knowledge of a particular area of study or concern
   d) width of railroad tracks
   e) tracts of land given to railroads by the federal government for the purpose of expanding rail mileage and opening up underdeloped territories
   f) extending across an entire continent

2. rate discrimination

3. northeast corridor

4. subsidize

5. rebates

6. innovations

7. interstate

8. With tracks of different gauges, trains could not go from one rail line to another. If goods were shipped over a long distance, they had to be loaded and unloaded several times.

9. a) discovery of gold
   b) offering of land grants

10. a) rate discrimination -- charging higher rates in one area than another
    b) granting of rebates -- refunds to shippers of large quantities of goods on the rail line
    c) political favoritism in employment -- high paying jobs with the railroads were given to friends and relatives of politicians

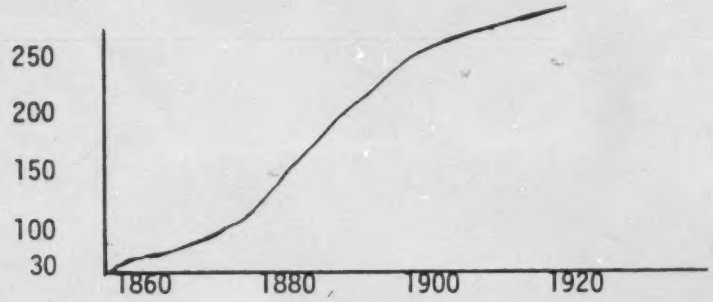
11. a) standard guage track
    b) automatic couplers and air brakes
    c) steel rails and wheels
    d) standard time zones

12. competitions from other modes of transportation

13. truck trailers hauled on flatcars. Piggyback service combines long distance rail haul with doorstep truck delivery.

14. making more efficient the sorting of cars

15.



16. Railroads share of total inter-city passengers has greatly declined between 1929 and 1970.

Chapter 4
Formative Test

1. ton mile cost
2. technology
3. exposure to weather
4. exposure to sparks
5. gauge
6. land grants
7. extends across an entire continent
8. rate discriminations
9. granting of rebates
10. interstate track
11. agreement on standard gauge
12. use of automatic couplers and air brakes
13. steel rails and wheels
14. subsidize
15. automobile, truck
16. airlines
17. truck trailers
18. use of computers
19. Washington, D. C.
20. Boston

Chapter 5
Review Sheet answers

1. a) cost of loading a vehicle for shipment
   b) cost of actually moving goods from one place to another
   c) multi-lane divided highways with a limited number of places from which vehicles are allowed to enter or leave
   d) routes in a freeway system which carry traffic from the suburbs to the central city or from one side of town to another
   e) routes in a freeway system which carry through traffic around the outskirts of a city
   f) routes in a freeway system which connect major freeways in areas of high traffic density
   g) assembling a series of interchangeable parts at various points along a slow-moving conveyor belt

2. patent

3. interchangeable

4. merger

5. between cities

6. within a city

7. speeded up productive and reduced costs

8. The automobile industry manufactured military vehicles and other war materials.

9. The Interstate highway system was provided for by The Highway Act of 1956.

10. By requiring information stickers on the windows of all new cars, The Disclosure Act of 1958 helped buyers in negotiating for the purchase price of new cars.

11. Flexibility, independence, status, and availability have contributed to the popularity of the car in the U.S.

12. Loading costs are less for trucks than for trains.

15. Seat belts, impact absorbing bumpers collapsible steering columns, strengthened roofs and doors

Chapter 5

Formative Test

1. internal combustion
2. patents
3. interchangeable
4. join together
5. the interstate highway system
6. seatbelts
7. reinforced roofs and doors
8. between cities
9. within cities
10. pickup truck
11. garbage truck
12. truck
13. terminal cost
14. over-the-road
15. doorstep delivery is possible
16. larger loads can be carried
17. within cities
18. limited access freeways
19. crosstown routes
20. around the city

Chapter 6
Review Sheet Answers

1. a) member of an aircraft crew
   b) flight across entire distance of a continent
   c) time when airlines are most crowded and ground facilities most strained
   d) assigned paths through airspace consisting of two layers
   e) government agency responsible for regulation and safety of civilian aviation
   f) government agency which deals with economic matters of air travel

2. intercontinental flight

3. range

4. general

5. airplane

6. revenue passenger mile

7. freight ton mile

8. The flight boosted the status of aviation worldwide.

9. Improvements in aircraft design and flight procedures greatly improved civilian flying safety.

10. (a) jets need longer runways
    (b) noise level is high
    (c) jet development has gone on faster than ground facilities have expanded

11. (a) regulate the nation's airways
    (b) enforce safety, flight, and equipment standards

13. (a) lack of navigation equipment
    (b) poor radio communication
    (c) poor safety equipment

14. (a) speed
    (b) avoidance of bad weather
    (c) comfort

16. (a) 60 million
    (b) 100 million
    (c) 150 million
    (d) 150 million
    (e) 180 million

Chapter 6
Formative Test Answers

1. aviator
2. minor
3. flies from coast to coast
4. intercontinental
5. it can fly 500 miles without refueling
6. major
7. speed
8. comfort
9. noise
10. need for longer runways
11. peak hours
12. private and business
13. airways
14. Federal Aviation Administration
15. Civil Aeronautics Board
16. board an aircraft
17. one mile
18. freight ton mile
19. approximately tripled
20. less than

Chapter 7
Review Sheet Answers

1. (a) most people living in cities
   (b) residential areas on the outskirts of a city
   (c) harmful things in air
   (d) harmful things in water
   (e) pollutants which have reached poisonous levels
   (f) noise level measure

2. junk yards

3. sedimentation

4. (a) carbon monoxide
   (b) hydrocarbons

5. Two scales are used because sounds coming from ground vehicles are different from those coming from aircraft.

7. More people live in cities in 1970 than did in 1890.
   (a) overloading of transportation routes
   (b) air pollution

8. to increase fuel economy

9. Acceleration and high speeds create more noise than moderate speed.

10. (a) waterway oil spills
    (b) highway construction

11. Industrial waste and improper sewage treatment

Chapter 7
Formative Test Answers

1. in cities
2. 75%
3. suburbs
4. harmful things in air
5. automobile
6. carbon monoxide
7. hydrocarbons
8. noise
9. sound
10. aircraft
11. ground transportation
12. airports
13. tractor-trailer diesel trucks
14. quieter
15. harmful things in water
16. is not
17. waterway oil spills
18. highway construction
19. junk cars
20. roadside litter

Chapter 8
Review Sheet Answers

1. (a) having so much traffic that it backs up and moves slowly
   (b) something that makes one seem more important
   (c) an idea of what something might be on the basis of what has been happening
   (d) a service of the FAA to make the traffic flow safely
   (e) holding planes in a circling pattern at various altitudes while waiting to land

2. maximum vehicle capacity

3. maximum commuter capacity

4. (a) buses
   (b) commuter trains

5. spacing of aircraft while taking off, inflight, or landing for safety purposes

7. navigational aids (NAVAID's)

8. suburbs which have few people
   There are too few people to make public transportation economical.

9. because people are travelling between work and home

10. because there was so much air traffic in and out of the airports

11. the two different altitudes and the various paths on which airplanes fly
    Highway networks have only one level.

Chapter 8
Formative Test Answers

1. projections
2. status symbol
3. buses
4. commuter trains
5. congested
6. 1 and 2
7. maximum vehicle capacity
8. maximum commuter capacity
9. privacy
10. independence
11. Air traffic control
12. New York City
13. aircraft separation
14. jets
15. radios or radar
16. aircraft control

Chapter 9
Review Sheet Answers

1. (a) The number of transport routes in an area
   (b) The land a transport route is built on
   (c) A strip of land between highway lanes
   (d) A place where two or more freeways meet

2. Financial costs refer to money spent; social costs concern human inconvenience and lifestyle changes.

3. (a) inconvenience
   (b) change in lifestyles

4. human interaction

6. (a) To keep costs low
   (b) Low-income people usually do not have much political power.

7. taxable land base

8. (a) parking lots
   (b) service stations
   (c) aircraft hangers

9. to have an area around an airport where the noise will not disturb people

10. (a) total land
    (b) flat land for runways
    (c) prevailing winds
    (d) hills and buildings in approach lanes
    (e) bird attracting dumps
    (f) how airport fits area
    (g) cost of construction
    (h) political considerations

11. airport zoning

12. schools, hospitals, residential areas

13. farming, golf courses, open recreation areas

Chapter 9
Formative Test Answers

1. highways
2. network density
3. right of way
4. median
5. two or more freeways meet
6. building through low-cost neighborhoods
7. splitting of neighborhoods
8. large amounts of land
9. taxable land base
10. parking lots
11. garages
12. total land
13. flat land for runways
14. location of bird attracting dumps
15. buffer zone
16. airport zoning
17. land fills
18. tall buildings
19. open recreation areas
20. golf courses

Chapter 10
Review Sheet Answers

1. (a) something else that can be done
   (b) transportation available to the public which is able to move large numbers of people at one time
   (c) changeable roadside message signs to warn motorists in advance of dangerous traffic conditions
   (d) flying at times other than the two busy periods of the day

2. Staggering work hours would cut traffic congestion by spreading transportation needs over more hours

3. busways

4. (a) saves money
   (b) reduces number of cars on the road
   (c) reduces air and noise pollution and saves fuel

5. (a) buses
   (b) commuter trains

6. planning short shopping, business, and pleasure trips so that the least distance is covered by car

7. "Burner cans" are put on older airplanes to reduce jet smoke pollution.

8. (a) use of steeper angle landings and takeoffs
   (b) sound proofing maintenance areas
   (c) making aircraft approaches over water where possible

9. Remote air terminals are places away from airports where air passengers can park their cars, buy tickets, check baggage, and board a bus for the airport. At peak hours ticket lines are shortened and baggage handling is speeded up.

10. jet smoke emmissions

Chapter 10
Formative Test Answers

1. car pool
2. something else that be done
3. reduce traffic congestion
4. buses
5. commuter trains
6. motor vehicle direction systems
7. avoid short trips
8. combine shopping, business, and pleasure trips
9. use of steeper angle landings and takeoffs
10. sound proofing maintenance areas
11. making aircraft approaches and departives over water
12. remote air terminals
13. non peak-hour flying
14. less

Chapter 11
Review Sheet Answers

1. (a) actions taken by governments to make things better
   (b) government agency which helps enforce environmental laws
   (c) an extra charge put on something
   (d) a statement clearly saying what impact a new transportation facility will have upon the environment

2. to permit greater fuel economy

3. noise pollution control standards

4. (a) lower air and noise pollution
   (b) create car pools
   (c) force people to rely on public transportation
   (d) create inconvenience

7. transportation financed by the government in Washington, D. C.

8. Private aircraft often disrupt the takeoff and landing patterns of airliners because of the slower speeds at which they fly.

9. Japan is a small nation with a great number of people, therefore rail transportation is an efficient method of public transportation.

10. aircraft approach aids

Chapter 11
Formative Test Answers

1. air pollution control standard
2. Environmental Protection Agency
3. interstate motor carriers -- trucks and buses
4. Rationing
5. tax break
6. AMTRAK
7. old equipment - passenger cars and trucks
8. old passenger stations
9. surcharge
10. incompatible
11. Federal Aviation Administration
12. radar and radio equipment
13. what impact the freeway will have upon the environment

1. (a) Fast ways to travel that move many people into and out of cities in a short time in comfort and safety
   (b) a transit system using one type of transportation
   (c) a transit system using two or more types of transportation systems
   (d) bus routes which tie into main rail and busway lines
   (e) a branch of the U. S. Department of Transportation which helps to plan and finance rapid transit systems

2. land acquisition

3. (a) earthquake considerations
   (b) crossing the bay

4. underground

5. above the ground

6. BART has automated train control and automatic fare collection, features generally not found on conventional trains.

7. a) more efficient
   b) reduce noise and air pollution
   c) efficient urban land use

8. MARTA is an intermodal transit system while BART is unimodal.

9. BART had more construction problems because of crossing the Bay and the necessity to protect against earthquakes. MARTA did not have major problems such as these.

10. Parking spaces at transit stations. These allow passengers to park at the station and ride a train or bus over the more conjested routes into the city.

1. urban rapid transit system
2. earthquakes
3. constructing under the Bay
4. cutting through rocks
5. subway
6. aerial
7. has only one type of transportation
8. computers
9. urban land use
10. uses two or more types of transportation
11. Urban Mass Transportation Administration
12. buying
13. MARTA is intermodal, BART is unimodal
14. Feeder

Chapter 13
Review Sheet Answers

1. railway cars either straddle or hang from a single aerial rail -- short distance

2. train rides on a cushion of air and uses the track only as a guide-way -- short or long distance

3. train-like vehicle which may move at high speeds inside a tube-- long distance

4. small, quiet, non-polluting vehicles which move over some type of automated track-- short distance

5. aircraft which can take off and land on very short runways -- long distance

6. ship which ride on top of a high bubble of air held in by its skirts-- long distance

7. liquids - petroleum, gas

Chapter 13
Formative Test Answers

1. monorail
2. guide
3. tube vehicle system
4. intraurban
5. reduced congestion
6. feeder
7. surface effect ships
8. energy products
9. solid materials
10. mail